Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method~~Method of reconstructing an image of an object from volumetric data of the object, wherein the volumetric data include a plurality of projections corresponding to a plurality of time points, the method,~~ comprising ~~the steps of~~:

~~estimating a motion of the object;~~

acquiring volumetric image data indicative of a moving organ during at least a sub-portion of a movement cycle of the moving organ;

acquiring a signal indicative of the movement cycle;

using a similarity measure to determine motion fields that describe motion of the moving organ during the movement cycle based on the image data and the signal, wherein the similarity measure is a difference measure;

determining ~~first time points~~ where the motion ~~of the object~~ is minimal ~~on the basis of the estimated motion of the object~~ based on the motion fields; ~~and~~

selecting ~~projections~~ a portion of the image data that corresponds to where the motion is determined to be minimal ~~from the plurality of projections on the basis of the first time points~~; and

reconstructing an~~the~~ image from the selected portion of the image data~~projections selected from the plurality of projections~~.

2. (Currently amended) The method of claim 1, wherein the volumetric image data corresponds to cardiac CT data and one of simultaneously measured electrocardiogram data and photoplethysmographic data~~; wherein a number of low resolution images corresponding to a heart region are reconstructed; wherein the number of low resolution images correspond to a plurality of phase points of the heart; wherein a plurality of motion fields is determined for estimating the motion of the object; wherein the determination of the plurality of motion fields is~~

~~performed for the number of low resolution images such that the plurality of motion fields describe the motion of the object between the number of low resolution images;~~

~~determining a high resolution map of second time points where the motion of the heart is minimal on the basis of the first time points;~~

~~selecting second projections from the plurality of projections on the basis of the second time points; and~~

~~reconstructing a high resolution image from the second projections.~~

3. (Currently amended) The method of claim 1, wherein the plurality of motion fields are indicative of motion between motion phases of the movement cycle. ~~2, wherein a first number of the first time points is smaller than a second number of the second time points and wherein the second number of second time points is determined from the first time points by interpolation; and wherein the reconstruction of the high resolution image is performed such that a first area of the heart in the high resolution image is determined from first portions of the volumetric data corresponding to a first phase point of the heart, and a second area of the heart in the high resolution image is determined from second portions of the volumetric data corresponding to a second phase point of the heart, the first phase point being different from the second phase point.~~

4. (Currently amended) The method of claim 1, wherein the volumetric image data correspond to the coronary artery region and simultaneously measured electrocardiogram data~~; wherein the image is reconstructed on the basis of an iterative reconstruction optimization; and wherein a plurality of motion fields is determined for estimating the motion of the object~~.

5. (Currently amended) The method of claim 4, wherein the selection of the portion of the volumetric image data ~~projections from the plurality of projections~~ corresponds to a setting of a gating window; wherein, on a variation of the gating window, a new image is reconstructed ~~on the basis of the iterative reconstruction optimization~~ in real-time; wherein the new image is displayed on a display such that a real-time optimization is provided.

6. (Previously presented) The method of claim 5, wherein the variation of the gating window is based on the first time points such that the gating window is automatically set to time points where there is minimal motion in the object such that the new image is automatically optimized.

7. (Previously presented) The method of claim 5, wherein the variation of the gating window is based on an input from a user such that a real-time interactive optimization of the image is provided.

8. (Previously presented) The method of claim 4, further comprising the steps of:

performing a sliding reconstruction of the volumetric data;

segmenting the coronary vessel tree from the volumetric data; wherein the determination of the plurality of motion fields is performed such that the plurality of motion fields describes motions of areas of the coronary vessel tree.

9. (Currently amended) An ~~i~~Image processing device, comprising:

a memory for storing volumetric data, wherein the volumetric data include a plurality of projections corresponding to a plurality of time points; and

an image processor for reconstructing an image of an object from the volumetric data of the object, wherein the image processor is adapted to perform the following operation:

estimating a motion of the object;

determining a plurality of motion fields from volumetric image data and the estimated motion of the object;

determining first time points, based on the plurality of motion fields, where the motion of the object is minimal ~~on the basis of the estimated motion of the object~~; and

selecting projections from the plurality of projections on the basis of the first time points; and

reconstructing the image from the projections selected from the plurality of projections.

10. (Currently amended) The image processing device of claim 9, wherein the image processing device is a CT system suitable for cardiac CT; wherein the volumetric data correspond to cardiac CT data and one of simultaneously measured electrocardiogram data and photoplethysmographic data~~; wherein the image processor is further adapted to perform the following operation:~~

~~determining a plurality of motion fields for estimating the motion of the object;~~

~~reconstructing a number of low resolution images corresponding to a heart region; wherein the number of low resolution images corresponds to a plurality of phase points of the heart; wherein the determination of the plurality of motion fields is performed for the number of low resolution images such that the plurality of motion fields describes the motion of the object between the number of low resolution images;~~

~~determining a high resolution map of second time points where the motion of the heart is minimal on the basis of the first time points;~~

~~selecting second projections from the plurality of projections on the basis of the second time points; and~~

~~reconstructing a high resolution image from the second projections~~.

11. (Currently amended) The image processing device of claim 9, wherein the image processing device is a multi-slice CT system; wherein the volumetric data correspond to ~~the~~ a coronary artery region and simultaneously measured electrocardiogram data; wherein the selection of the projections from the plurality of projections corresponds to a setting of a gating window; wherein, on a variation of the gating window, a new image is reconstructed on the basis of an iterative reconstruction optimization in real-time; and wherein the new image is displayed on a display such that a real-time optimization is provided.

12. (Currently amended) A computer readable medium encoded with computer executable instructions, which, when executed by a computer, cause the computer ~~Machine readable medium having instructions recorded thereon configured to instruct a computer~~ to perform the following operation:

determining a plurality of motion fields from volumetric data corresponding to a scanned object;

~~estimating a motion of the object;~~

determining first time points where the motion of the object is minimal on the basis of the ~~estimated~~ motion fields~~of the object~~; and

selecting projections from the plurality of projections on the basis of the first time points; and

reconstructing ~~the~~ an image from the projections selected from the plurality of projections.

13. (Currently amended) The computer ~~machine~~ readable medium of claim 12, ~~wherein a plurality of motion fields is determined for estimating the motion of the object;~~ wherein the volumetric data correspond to cardiac CT data and ~~one of~~ simultaneously measured ~~electrocardiogram data and~~ photoplethysmographic data~~; wherein a number of low resolution images corresponding to a heart region are reconstructed; wherein the number of low resolution images corresponds to a plurality of phase points of the heart; wherein the determination of the plurality of motion fields is performed for the number of low resolution images such that the plurality of motion fields describes the motion of the object between the number of low resolution images; wherein the instructions recorded thereon are further configured to instruct the computer to perform the following operation:~~

~~determining a high resolution map of second time points where the motion of the heart is minimal on the basis of the first time points;~~

~~selecting second projections from the plurality of projections on the basis of the second time points; and~~

~~reconstructing a high resolution image from the second projections~~.

14. (Currently amended) The computer ~~machine~~ readable medium of claim 12, wherein the volumetric data correspond to ~~the~~ a coronary artery ~~region and simultaneously measured electrocardiogram data~~; wherein the selection of the projections from the plurality of projections corresponds to a setting of a gating window; wherein, on a variation of the gating window, a new

image is reconstructed on the basis of an iterative reconstruction optimization in real-time; and wherein the new image is displayed on a display such that a real-time optimization is provided.

15. (New) The computer readable medium of claim 12, wherein the plurality of motion fields describe inter-image motion.

16. (New) The computer readable medium of claim 12, wherein the act of determining the plurality of motion fields includes estimating a magnitude of the motion based on a difference measure.

17. (New) The computer readable medium of claim 12, wherein the act of determining the plurality of motion fields includes estimating a magnitude of the motion based on a similarity measure.

18. (New) The computer readable medium of claim 12, wherein the act of determining the first time points where the motion of the object is minimal includes comparing the motion fields to a threshold.

19. (New) The image processing device of claim 9, wherein the plurality of motion fields includes a magnitude of the motion based on a difference measure.

20. (New) The image processing device of claim 9, wherein the plurality of motion fields includes a magnitude of the motion based on a similarity measure.